

ID#101
2002
Final

Report to:
National Peanut Board

Project:
Evaluation of the Performance of Fertility Programs, Crop Growth Stimulants and Inoculants for Peanuts (Project No. 437904)

Cooperator:
Charles W. Swann

Materials and Methods:

Separate field trials were established for evaluation of (a) Peanut Inoculants and Growth Stimulants and (b) Starter Fertilizer usage. These trials were established at the Tidewater AREC, Suffolk, VA on a sandy loam soil which had not been planted to peanuts for 15 consecutive years. The experimental design of these field trials was a randomized complete block design with 4 replications. Plot size was two rows spaced 36 inches apart and 30 feet in length. All plots were bordered on each side by two non-treated rows. Other than specific experimental variables evaluated all plots were managed as prescribed by Virginia Cooperative Extension peanut production recommendations. Products evaluated in the Peanut Inoculants and Growth Stimulants trial were Micro-Fix, Cowpea inoculant, Peanut "Special" (2 rates), HiStick, Soil Implant, Lift and Asset RTU or Advance + HiStick. The treatment variables evaluated in the Starter Fertilizer trial were no starter fertilizer and 10 gallons per acre of 10-34-0 applied 2 inches to the side of planted seed with injection at seed depth, 1 inch below and 2 inches below seed depth. The Peanut Inoculants and Growth Stimulants trial was planted May 7, 2002 with the Perry variety. The Starter Fertilizer trial was planted May 14, 2002 with HiStick treated (10g per 5 lb seed) NC-V 11 peanut seed. Both trials were dug October 7, 2002, harvested with a plot combine and yield and grade determined.

Results:

Yield and grade data are presented in Tables I and II (attached). In the Peanut Inoculants and Growth Stimulants trial the Advance + HiStick treatment was significantly lower than that of untreated peanuts while all other inoculants or growth stimulant treatments produced yields which did not differ from untreated peanuts. Despite the fact that peanut had not been grown on the experimental site for at least 15 years untreated peanuts had light to moderate nodule development. Treated plots had moderate to abundant nodule development. Use of either inoculant or root stimulants products was of no benefit in this research.

In the Starter Fertilizer Study yield of peanuts treated with 10-34-0 starter fertilizer did not differ significantly from peanuts grown without starter fertilizer. This trial showed no detrimental effect from use of starter fertilizer, however, previous research (1999) showed peanut stand less with starter fertilizer use when heavy rainfall occurred immediately after planting.

Account of Expenditures (through January 31, 2003):

<u>Item</u>	<u>Expenditure</u>
Salaries	2,820.30
Wages	2,488.87
Fringe Benefits	1,164.43
Supplies & Materials	<u>860.43</u>
Total	7,334.03

Table I:

Peanut Inoculants and Growth Stimulants Final Summary

Table II:

Starter Fertilizer Study Final Summary

Tidewater Agricultural Research and Extension Center
Peanut Inoculants & Growth Stimulants

Trial ID : A0702

Location : DUKE FARM

SITE DESCRIPTION

Crop : PEANUT
 Plot Width/Area, Unit : 6 , FT
 Planting Date : 07 MAY 02

Variety : PERRY
 Plot Length, Unit : 30 , FT
 Digging Date : 07 OCT 02

Reps : 4 Study Design : RCB
 Harvest Date : 14 OCT 02

MAINTENANCE

Field Preparation / Maintenance :

- | | |
|---|--|
| 1. APR-26 Dual Magnum 7.62 EC 1 pt/A | 9. JUL-02 Select 2 EC 8 oz/A |
| 2. MAY-07 Orthene 97 L 1 lb/A | 10. JUL-17 Folicur 3.6 F 7.2 oz/A |
| 3. MAY-15 Boa 5.5 oz/A | 11. JUL-19 Lorsban 15 G 13 lb/A |
| 4. MAY-15 Basagran 4 EC 1 pt/A | 12. AUG-08 Folicur 3.6 F 7.2 oz/A |
| 5. MAY-15 Butyrac 175 1 pt/A | 13. AUG-08 Danitol 2.4 EC 10 oz/A |
| 6. MAY-15 Dual Magnum 7.62 EC 1 pt/A | 14. SEP-03 Bravo WeatherStik 1.5 pt/A |
| 7. JUN-18 Storm 4 EC 1.5 pt/A | 15. SEP-03 Omega 500 F 1 pt/A |
| 8. JUN-18 Select 2 EC 8 oz/A | |

SOIL DESCRIPTION

Texture : SANDY LOAM % OM : 1.7 % Sand : 71.0 % Silt : 24.4 % Clay : 4.6 pH : 5.2
 Additional Measured Elements : Landplaster 950 lb/A , Boron 1 qt/A (2x) , Manganese 1 qt/A (2x)

SUMMARY

Trt No	Treatment Name	Rate Unit	Applied Form	NODULE*	YIELD	GRADE	GRADE	GRADE	GRADE	GRADE	GRADE
				07 OCT 02	LBS / A 07 OCT 02	FAN** %	ELK** %	SS** %	OK** %	DK** %	SMK** %
1	Untreated			1.8 b	4086.2 a	62.0	26.0	2.0	4.0	1.0	65.0
2	Mirco-Fix	20 gm / 5 lb	Seed App	2.3 ab	4019.4 a	62.0	28.0	1.0	3.0	1.0	68.0
3	Cowpea	10 gm / 5 lb seed	Seed App	2.5 ab	3708.4 ab	61.0	25.0	2.0	3.0	2.0	68.0
4	Peanut "Special"	10 gm / 5 lb seed	Seed App	2.5 ab	3478.8 ab	60.0	25.0	1.0	4.0	1.0	65.0
5	Peanut "Special"	20 gm / 5 lb seed	Seed App	2.3 ab	3856.6 ab	61.0	25.0	1.0	4.0	1.0	65.0
6	HiStick	10 gm / 5 lb seed	Seed App	2.3 ab	3374.2 ab	62.0	28.0	2.0	4.0	2.0	64.0
7	Soil Implant +	17.6 gm/100 rw ft	IF (granular)	3.0 a	3632.8 ab	65.0	24.0	2.0	4.0	2.0	64.0
8	Lift	36.9 ml / 3L	IF	2.8 a	3766.5 ab	63.0	25.0	2.0	4.0	2.0	64.0
9	Asset RTU HiStick	81 ml / 3L 10 gm / 5 lb seed	IF Seed App	2.8 a	3801.4 ab	61.0	28.0	2.0	3.0	1.0	66.0
10	Advance HiStick	81 ml / 5 lb seed 10 gm / 5 lb seed	IF Seed App	2.5 ab	3214.3 b	62.0	27.0	2.0	3.0	1.0	67.0
	LSD (P=.05)			0.76	679.14	.	.	.	.	.	.
	Standard Deviation			0.52	468.06	.	.	.	.	.	.
	CV			21.37	12.67	.	.	.	.	.	.

Means followed by same letter do not significantly differ (P=.05, Duncan's New MRT)

* Nodulation - 0=None, 1=Light, 2=Moderate, 3=Abundant

**Grade date taken from a composite sample from each treatment.

Tidewater Agricultural Research and Extension Center
Starter Fertilizer Study

Trial ID : A0802

Location : DUKE FARM

SITE DESCRIPTION

Crop : PEANUT
Plot Width/Area, Unit : 6 , FT
Planting Date : 14 MAY 02

Variety : NC-V 11
Plot Length, Unit : 30 , FT
Digging Date : 07 OCT 02

Reps : 4 Study Design : RCB
Harvest Date : 14 OCT 02

MAINTENANCE

Field Preparation / Maintenance :

- | | |
|---|--|
| 1. APR-26 Dual Magnum 7.62 EC 1 pt/A | 9. JUL-02 Select 2 EC 8 oz/A |
| 2. MAY-07 Orthene 97 L 1 lb/A | 10. JUL-17 Folicur 3.6 F 7.2 oz/A |
| 3. MAY-15 Boa 5.5 oz/A | 11. JUL-19 Lorsban 15 G 13 lb/A |
| 4. MAY-15 Basagran 4 EC 1 pt/A | 12. AUG-08 Folicur 3.6 F 7.2 oz/A |
| 5. MAY-15 Butyrac 175 1 pt/A | 13. AUG-08 Danitol 2.4 EC 10 oz/A |
| 6. MAY-15 Dual Magnum 7.62 EC 1 pt/A | 14. SEP-03 Bravo WeatherStik 1.5 pt/A |
| 7. JUN-18 Storm 4 EC 1.5 pt/A | 15. SEP-03 Omega 500 F 1 pt/A |
| 8. JUN-18 Select 2 EC 8 oz/A | |

SOIL DESCRIPTION

Texture : SANDY LOAM % OM : 1.7 % Sand : 71.0 % Silt : 24.4 % Clay : 4.6 pH : 5.2
Additional Measured Elements : Landplaster 950 lb/A , Boron 1 qt/A (2x) , Manganese 1 qt/A (2x)

SUMMARY

Trt No	Treatment Name	YIELD LBS / A	GRADE FAN* %	GRADE ELK* %	GRADE SS* %	GRADE OK* %	GRADE DK* %	GRADE SMK* %
1	No Starter Fertilizer	3997.3 a	62.0	25.0	1.0	4.0	2.0	63.0
2	10-34-0 0" depth	4431.7 a	64.0	28.0	1.0	5.0	1.0	64.0
3	10-34-0 2" depth	4331.9 a	60.0	25.0	1.0	4.0	1.0	64.0
4	10-34-0 1" depth	4375.9 a	62.0	22.0	1.0	4.0	2.0	63.0
	LSD (P=.05)	589.05	.	.	.	.	.	.
	Standard Deviation	368.27	.	.	.	.	.	.
	CV	8.60	.	.	.	.	.	.

Means followed by same letter do not significantly differ (P=.05, Duncan's New MRT)

*Grade date taken from a composite sample from each treatment.

Report to: National Peanut Board

Project: Evaluation of the Performance of Crop Growth Stimulators, Inoculants and Various Supplemental Fertility Programs for Peanuts

Cooperator: Charles W. Swann

Materials and Methods

Perry peanut was planted May 9, 2001 on a loamy sand soil site at the Tidewater AREC, Suffolk, VA. Separate tests were established for evaluation of (a) Peanut Inoculants and Growth Stimulants and (b) Peanut with and without Starter Fertilizer. The experimental design of these field trials were a randomized complete block design with 4 and 12 replications respectively. Plot size was two 36 inch rows by 30 feet in length. Crop management procedures were as prescribed by Virginia Cooperative Extension recommendations. Treatment variables evaluated in the Peanut Inoculants and Growth Stimulants trials were dry and wet seed applications of Nitro-Fix and Peanut Special and in-furrow applications of Soil Implant, Lift, Asset RTU and Advance. The treatment variables of the Starter Fertilizer evaluation trial were no starter fertilizer and 10 gallons per acre of 10-34-0 applied 2 inches to the side and 2 inches below the point of peanut seed placement. All plots were dug October 3 and combined October 10. Yield, grade and value per acre were determined. Corn was grown on the evaluation site in 1999 and small grains in 2000 (3 year rotation).

Results

Growth evaluation, yield, grade and value data obtained are presented in Tables I, II and III. Applications of inoculants or root stimulant products (Table I and II) did not result in significant impact on yield, grade or value of peanut when compared with non-treated peanuts. Application of starter fertilizer had no significant impact on peanut yield, grade or value. Additional research is needed to evaluate the response of peanut to inoculants products when grown on soils with longer rotation periods between peanut crops and the impact of starter fertilizer placement on peanut growth, development and performance.

Account of Expenditures thru May 31, 2002

<u>Item</u>	<u>Amount</u>
Salaries	\$2,415.00
Wages	1,000.00
Fringe Benefits	866.95
Misc. Supplies	487.98 (paid prior to 5/31/02)
Misc. Supplies	<u>210.09</u> (to be payed by 6/12/02)
Total	\$4,980.00

Report to: National Peanut Board

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Cooperator: Charles W. Swann

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Results

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TABLE I

Tidewater Agricultural Research and Extension Center
Peanut Inoculants & Growth Stimulants

Project Code : A0801

Location : RESEARCH FARM

Investigator : DR. CHARLES SWANN

Trt No	Treatment Name	Rate Unit	Applied Form	GROWTH %	GROWTH %	YIELD	VALUE	VALUE	
				25 JUL 01	03 SEP 01	LBS / A 09 OCT 01	\$ / CWT	\$ / A	
1	Untreated			100.0 a	100.0 ab	5993.7 a	32.05 a	1922.50 a	
2	Nitro-Fix	5.0 oz/100 lb - dry	Seed App	97.5 a	97.5 ab	5788.6 a	32.31 a	1876.50 a	
3	Nitro-Fix	5.0 oz/100 lb - wet	Seed App	100.0 a	97.5 ab	6222.8 a	32.04 a	1993.75 a	
4	Peanut "Special"	7.0 oz/100 lb - dry	Seed App	93.8 a	102.5 ab	5897.2 a	31.85 a	1875.00 a	
5	Peanut "Special"	7.0 oz/100 lb - wet	Seed App	95.0 a	97.5 ab	5767.5 a	32.25 a	1860.00 a	
6	Soil Implant+	6.0 oz/1000 row ft	IF	95.0 a	97.5 ab	5580.6 a	31.60 a	1764.00 a	
7	Lift	1.0 oz /1000 row ft	IF	100.0 a	105.0 a	6066.0 a	32.41 a	1968.25 a	
8	Asset RTU	2.2 oz/1000 row ft	IF	100.0 a	102.5 ab	6280.1 a	32.26 a	2027.25 a	
9	Advance	2.2 oz/1000 row ft	IF	97.5 a	95.0 b	5562.5 a	32.17 a	1789.00 a	
LSD (P=.05)				=	6.55	8.28	729.78	0.930	266.597
Standard Deviation				=	4.49	5.67	500.03	0.637	182.667
CV				=	4.60	5.70	8.47	1.980	9.630

Means followed by same letter do not significantly differ (P=.05, Duncan's New MRT)

TABLE II

Tidewater Agricultural Research and Extension Center
Peanut Inoculants & Growth Stimulants

Project Code : A0801

Location : RESEARCH FARM

Investigator : DR. CHARLES SWANN

Trt No	Treatment Name	Rate Unit	Applied Form	GRADE FAN %	GRADE ELK %	GRADE SS %	GRADE OK %	GRADE DK %	GRADE SMK %	
1	Untreated			82.5 a	36.0 a	3.3 a	2.0 a	0.3 a	68.5 ab	
2	Nitro-Fix	5.0 oz/100 lb - dry	Seed App	76.8 a	38.5 a	2.8 a	2.0 a	0.3 a	69.5 ab	
3	Nitro-Fix	5.0 oz/100 lb - wet	Seed App	81.3 a	39.8 a	3.0 a	2.5 a	0.0 a	68.5 ab	
4	Peanut "Special"	7.0 oz/100 lb - dry	Seed App	79.0 a	37.0 a	2.5 a	2.0 a	0.3 a	68.8 ab	
5	Peanut "Special"	7.0 oz/100 lb - wet	Seed App	81.0 a	37.5 a	2.5 a	1.5 a	0.0 a	69.8 a	
6	Soil Implant+	6.0 oz/1000 row ft	IF	80.8 a	35.3 a	3.3 a	2.0 a	0.3 a	67.5 b	
7	Lift	1.0 oz /1000 row ft	IF	81.0 a	39.0 a	3.5 a	1.8 a	0.0 a	69.0 ab	
8	Asset RTU	2.2 oz/1000 row ft	IF	78.3 a	38.0 a	3.3 a	1.5 a	0.3 a	69.0 ab	
9	Advance	2.2 oz/1000 row ft	IF	79.5 a	37.0 a	3.3 a	2.0 a	0.0 a	68.8 ab	
LSD (P=.05)				=	5.33	4.88	1.13	0.98	0.57	1.82
Standard Deviation				=	3.65	3.35	0.78	0.67	0.39	1.25
CV				=	4.57	8.91	25.62	34.96	281.42	1.82

Means followed by same letter do not significantly differ (P=.05, Duncan's New MRT)

TABLE III

Tidewater Agricultural Research and Extension Center
Peanuts with & without Starter Fertilizer

Project Code : A1001
 Investigator : DR. CHARLES SWANN

Location : RESEARCH FARM

Trt No	Treatment Name	Description	GROWTH % 25 JUL 01	GROWTH % 03 SEP 01	YIELD LBS / A 08 OCT 01	VALUE* \$ / CWT	VALUE \$ / A
1	No Starter Fertilizer		100.0 a	100.0 a	4509.9 a	32.07	1446.25 a
2	10-34-0	2" x 2" placement	102.5 a	100.0 a	4570.1 a	34.47	1483.83 a
LSD (P=.05)	=		2.87	2.71	242.13	.	78.220
Standard Deviation	=		3.20	3.02	269.47	.	87.050
CV	=		3.16	3.02	5.94	.	5.940

Means followed by same letter do not significantly differ (P=.05, Duncan's New MRT)

*Value/CWT data taken from a composite sample from each treatment.

Trt No	Treatment Name	Description	GRADE* FAN %	GRADE* ELK %	GRADE* SS %	GRADE* OK %	GRADE* DK %	GRADE* SMK %
1	No Starter Fertilizer		79.0	38.0	5.0	1.0	0.0	67.0
2	10-34-0	2" x 2" placement	76.0	36.0	5.0	1.0	0.0	68.0
LSD (P=.05)	=		.	.	.	.	.	.
Standard Deviation	=		.	.	.	.	.	.
CV	=		.	.	.	.	.	.

Means followed by same letter do not significantly differ (P=.05, Duncan's New MRT)

*Grade data taken from a composite sample from each treatment.